

CLAIMS

What is claimed is:

1. An injection device comprising:
5 a housing having a penetrating member aperture,
 a port in said housing that receives a rigid container that contains an injectable drug;
 a first penetrating member movable from a storage position in the housing to an injection position extending outside the housing through the
10 aperture; and
 a channel that brings said penetrating member into fluid communication with the first container.
2. The injection device of Claim 1 wherein the channel comprises a fluid pathway in a manifold, the manifold further comprising a second channel to transfer the
15 injectable drug from the housing to the user.
3. The injection device of Claim 1 further comprising an actuator that displaces the penetrating member from the storage position to the injection position.
4. The injection device of Claim 3 wherein the actuator includes a plunger
20 mechanism on a first housing surface that displaces said first penetrating member through the aperture on a second housing surface between the storage position and the injection system.
5. The device of Claim 1 further comprising a locking mechanism that prevents displacement of said first penetrating member to said injection position after injection.

6. The injection device of Claim 1 further comprising a biasing mechanism that resiliently biases the penetrating member in said storage position.
7. The injection device of Claim 1 further comprising a penetrating member retraction system that retracts said penetrating member into the housing after
5 injection.
8. The injection device of Claim 1 wherein the penetrating member extends in the range of 5 - 12 millimeters out of said housing in said injection position for a subcutaneous injection.
9. The injection device of Claim 1 wherein the penetrating member extends up to
10 about 3 cm out of said housing in said injection position for an intermuscular injection.
10. A drug injection device comprising:
a housing having a port that receives a container of injectable fluid;
a pressurizing mechanism that pressurizes the container to move the
15 injectable fluid; and
a penetrating member movable from a storage position in the housing to an injection position extending outside the housing, the penetrating member being in fluid communication with the container.
11. The device of claim 10 further comprising a sealing member to maintain the
20 injectable fluid in an upper end of the housing.
12. The device of claim 11 wherein the sealing member further comprises a membrane that is gas impermeable.

13. The device of claim 11 wherein the injection penetrating member includes a first end to pierce skin of the body being injected and a second end to pierce the sealing member after the first end has penetrated the skin.
14. The device of claim 10 further comprising an actuator that displaces the injection penetrating member between the storage position and the injection position.
15. A method of drug delivery comprising the steps of:
 - providing a housing having a first port that receives a first container of injectable fluid;
 - pressurizing the fluid in the container; and
 - moving an injection penetrating member from a storage position to an injection position, the injection penetrating member being in fluid communication with the first container.
16. The method of claim 15 further comprising the steps of:
 - providing a movable member slidable and sealingly positioned within the first port, the movable member fixedly supporting a first penetrating member in fluid communication with the container; and
 - collapsing a collapsible volume with the movable member upon insertion of the first container into the first port, the collapsible volume being in sealed communication with the first penetrating member to pressurize the container.
17. The method of claim 15 further comprising a second port in the housing that receives a second container that pressurizes the fluid in the first container as said second container contains a fluid to be transferred into the first container, further comprising the step of pressurizing the first container upon transfer of the fluid.

18. The method of claim 15 further comprising the step of penetrating the body with a first end of the injection penetrating member and then coming into fluid communication with the injectable fluid with a side opening of the injection penetrating member.
- 5 19. The method of claim 15 further comprising the step of retracting and locking the injection penetrating member within the housing after injection.
20. The method of claim 15 further comprising providing a gas impermeable membrane along at least a portion of a fluid path between the container and the penetrating member.
- 10 21. The method of claim 15 further comprising providing a compressible volume, and compressing the volume to pressurize the container.